Remarks

The Office Action mailed November 15, 2002 has been carefully reviewed and the foregoing amendment has been made in consequence thereof. Submitted herewith is a Submission of Marked-Up Claims.

Claims 1-23 are now pending in this application. Claims 1-23 stand rejected.

The rejection of Claims 1-6, and 9-12 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. ("Hibino") (US Pat. No. 5,182,483) in view of Berger (US Pat No. 5,637,943) is respectfully traversed.

Hibino describes a squirrel cage rotor including a rotor core formed by laminating a plurality of steel sheets (1). A first set of laminations are inclined to the left, and a second set of laminations are inclined to the right. The steel sheets have punched portions (2) for forming equally spaced slots (3) along the outer circumference. The steel sheets are laminated such that the punched slots are skewed and the slots axially pass through the rotor core. The skewed slots reduce a harmonic electromotive force that acts as an abnormal torque against the rotor, and consequently induces a pulsating torque or causes vibration or noise.

Berger describes a squirrel-cage that includes a groove cross section (4) divided in a radial direction into four groove zones (5). The groove zones are alternately displaced in and against the direction of the rotation of the rotor so that each conductor rod is fixed in place upon cooling and at high rotational speeds. Each groove zone includes at least one protuberance (7) and at least one bulge (8), positioned such that at least one protuberance and at least one bulge located in laterally opposed groove walls. The protuberances and the bulges have a similar shape and size.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Hibino nor Berger, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Hibino with Berger,

because there is no motivation to combine the references suggested in the art. Hibino describes skewing rotors slots to reduce harmonic electromotive force in the rotor bars which translates into abnormal torque on the rotor and noise. Berger describes closed grooves with protuberances and bulges such that, after casting, the conductor rods are positioned such that, even at very high speed operation, rotor imbalance is reduced. As such, Hibino and Berger describe different solutions to different problems, which suggests there is no motivation present in the prior art to combine the references. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention was made to use the notched laminations disclosed by Berger on the core disclosed by Hibino for the purpose of producing a groove shape for a squirrel-cage rotor which retains the conductor rod in a fixed position and thereby prohibits, with certainty, any imbalancing" suggests combining the disclosures.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present

invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection be withdrawn.

Further, and to the extent understood, neither Hibino nor Berger, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 1 recites "a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions."

Neither Hibino nor Berger, considered alone or in combination, describe nor suggest a rotor core that includes a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions Rather, Hibino describes a squirrel cage rotor including a rotor core formed by laminating a plurality of steel sheets that include punched slots that are skewed and the slots axially pass through the rotor core, and Berger describes a squirrel-cage that includes a groove cross section that is alternately displaced in and against the direction of the rotation of the rotor so that each conductor rod is fixed in place upon cooling and at high rotational speeds. Furthermore, Hibino does not describe or suggest a plurality of notches having an open end at the outer periphery of the lamination, and Berger describes a notch having an open end at the outer periphery of the lamination that extends radially outward from a center of the notch and is not radially coextensive with a skew portion. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Hibino in view of Berger.

Claims 2-6, and 9-12 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2-6, and 9-12 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-6, and 9-12 likewise are patentable over Hibino in view of Berger.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1-6, and 9-12 be withdrawn.

The rejection of Claims 7 and 8 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. ("Hibino") (US 5,182,483) in view of Berger (US 5,637,943) as applied to

Claims 1-4, 6, 8-12, and 14-23 and in further view of Pielok (US 6,369,686) is respectfully traversed.

Hibino and Berger are described above. Pielok describes a resolver that includes a first and a second winding core (2 and 4, respectively), that each include a first and a second set of core plates (3 and 6, respectively), that are laminated and include a plurality of winding spaces (7 and 9, respectively) with winding openings (8 and 10, respectively). A primary winding wire is wound on the first winding core, wherein the winding openings of the first set of core plates are larger in diameter than the diameter of the primary winding wire. A secondary winding wire is wound on the second winding core, wherein the winding openings of the second set of core plates are larger in diameter than the diameter of the secondary winding wire. The first set of core plates are rotated with respect to each other in such a way that the remaining total winding opening of the first winding is less than the diameter of the primary winding wire.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Hibino, Berger, or Pielok, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Hibino with Berger and Pielok, because there is no motivation to combine the references suggested in the art. Hibino skews slots to reduce harmonics electromotive in the rotor bars which translates into abnormal torque on the rotor and noise. Berger describes closed grooves with protuberances and bulges such that, after casting, the conductor rods are positioned such that, even at very high speed operation, no imbalance can occur. As such, Hibino and Berger describe different solutions to different problems, which suggests there is no motivation present in the prior art to combine the references. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention was made to use the lamination configuration disclosed by Pielok on the rotor core disclosed by Hibino et al. in view of Berger for the purpose of providing

laminations aligned in such a way that an automatic winding process can be performed through the respective winding openings" suggests combining the disclosures.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Hibino, Berger, or Pielok, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 1 recites "a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions."

None of Hibino, Berger, or Pielok, considered alone or in combination, describe nor suggest a rotor core including a plurality of slots having skew portions, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions. Rather, Hibino describes a squirrel cage rotor including a rotor core formed by laminating a plurality of steel sheets that include punched slots that are skewed and the slots axially pass through the rotor core, Berger describes a squirrel-cage rotor that includes a groove cross section that is alternately displaced in and against the direction of the rotation of the rotor so that each conductor rod is fixed in place upon cooling and at high rotational speeds, and Pielok describes a resolver that includes a first and a second winding core each with a first and a second set of core plates that are laminated and have a plurality of winding spaces with winding openings. Furthermore, Hibino does not describe or suggest a plurality of notches having an open end at the outer periphery of the lamination, Berger describes a notch having an open end at the outer periphery of the lamination that extends radially outward from a center of the notch and is not radially coextensive with a skew portion, and Pielok shows a notch having an open end at the outer periphery of the lamination that extends radially outward from the notch but, is not radially coextensive with a skew portion. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Hibino in view of Berger and Pielok.

Claims 7 and 8 depend directly from independent Claim 1. When the recitations of Claims 7 and 8 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 7 and 8 likewise are patentable over Hibino in view of Berger and Pielok.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 7-8 be withdrawn.

The rejection of Claim 13 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. ("Hibino") (US 5,182,483) in view of Berger (US 5,637,943) as applied to Claims 1-4, 6, 8-12, and 14-23 and in further view of Pryjmak (US 4,616,151) is respectfully traversed.

Hibino and Berger are described above. Pryjmak describes a wire wound armature for a DC motor including a laminated helical rotor core defining poles and axially disposed tooth portions that overlap. Each tooth portion has a primary skew because of overlap in

lamination and a secondary skew caused by the tooth portions themselves. The overlap in laminations produces a helical rotor cage.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None Hibino, Berger, or Pryjmak, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Hibino with Berger and Pryjmak, because there is no motivation to combine the references suggested in the art. Hibino skews slots to reduce harmonics electromotive in the rotor bars which translates into abnormal torque on the rotor and noise. Berger describes closed grooves with protuberances and bulges such that, after casting, the conductor rods are positioned such that, even at very high speed operation, no imbalance can occur. Pryjmak describes a DC motor with a wire wound core wherein teeth on the laminations are skewed and does not describe slots that have a skew portion. As such, Hibino and Berger describe different solutions to different problems, and Pryjmak describes different features than Hibino and Berger, which suggests there is no motivation present in the prior art to combine the references. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention was made to use the third set of rotor laminations disclosed by Pryjmak on the rotor disclosed by Hibino in view of Berger for the purpose of providing a scattering of the magnetic forces across the field and case structure in such a way as to reduce excitation of the resonant modes of the case" suggests combining the disclosures. Furthermore, neither Hibino nor Berger describe or suggest that excitation of the resonant modes of the case is a problem for which a solution is needed. Accordingly, there appears to be no motivation to combine Pryjmak with Hibino and Berger to provide a solution to a problem that neither Hibino nor Berger contemplate.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine

such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none Hibino, Berger, or Pryjmak, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 1 has been amended and recites "a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions."

None of Hibino, Berger, or Pryjmak, considered alone or in combination, describe nor suggest a rotor core having a plurality of slots having skew portions, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions. Rather, Hibino describes a describes a squirrel cage rotor including a rotor core formed by laminating a plurality of steel sheets that include punched slots that are skewed and the slots axially pass through the rotor

core, Berger describes a squirrel-cage rotor that includes a groove cross section that is alternately displaced in and against the direction of the rotation of the rotor so that each conductor rod is fixed in place upon cooling and at high rotational speeds, and Pryjmak describes a DC motor with a wire wound core wherein teeth on the laminations are skewed and does not describe slots that have a skew portion. Furthermore, Hibino does not describe or suggest a plurality of notches having an open end at the outer periphery of the lamination, and Berger describes a notch having an open end at the outer periphery of the lamination that extends radially outward from a center of the notch and is not radially coextensive with a skew portion. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Hibino in view of Berger and Pryjmak.

Claim 13 depends directly from independent Claim 1. When the recitations of Claim 13 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 13 likewise are patentable over Hibino in view of Berger and Pryjmak.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 13 be withdrawn.

The rejection of Claims 14-17, and 19-23 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. ("Hibino") (US 5,182,483) in view of Berger (US 5,637,943) as applied to Claims 1-6, and 9-12 above and further in view of Uchida (US 5,101,266) is respectfully traversed.

Hibino and Berger are described above. Uchida describes a rotor (32) constructed by arranging unitary rotor elements (34a, 34b) in a longitudinal direction such that the angular position of each group of elements is shifted by an angle corresponding to a half wave of a slot ripple. Rotor core elements (36a) and permanent magnet elements (38a) of each unitary rotor element (34a, 34b) are shifted in the longitudinal direction of the rotor (32) to form projections and recesses (54, 56) at the ends of each unitary rotor element (34a, 34b), and the ends of each unitary rotor element are held in position by metal end plates (42a, 42b, 44a, 44b), having recessed portions (48) and projecting portions (46) which engage with the projections and recesses.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some

teaching, suggestion, or incentive supporting the combination. None Hibino, Berger, or Uchida, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Hibino with Berger and Uchida, because there is no motivation to combine the references suggested in the art. Hibino skews slots to reduce harmonics electromotive in the rotor bars which translates into abnormal torque on the rotor and noise. Berger describes closed grooves with protuberances and bulges such that, after casting, the conductor rods are positioned such that, even at very high speed operation, no imbalance can occur. As such, Hibino and Berger describe different solutions to different problems, which suggests there is no motivation present in the prior art to combine the references. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention was made to use the rotor construction disclosed by Uchida on the rotor core disclosed by Hibino et al. in view of Berger for the purpose of forming projections and recesses at the ends of each unitary rotor element." suggests combining the disclosures. Additionally, Applicants submit there is no motivation to combine Uchida with Hibino and Berger for the purpose of forming projections and recesses at the ends of each unitary rotor element because Hibino and Berger do not describe nor suggest an end plate with corresponding recesses and projections that engage the projections and recesses formed in the core. This is a construction feature of Uchida which is not shared by Hibino and Berger, accordingly there is no motivation to combine Uchida with Hibino and Berger.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is

rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none Hibino, Berger, or Uchida, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 14 recites a rotor for an electric motor including "a rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one said skew portions, and a central rotor shaft opening...a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through said central rotor shaft opening...a plurality of secondary conductors extending through said slots...a plurality of permanent magnets located in said lamination notches."

None of Hibino, Berger, or Uchida, considered alone or in combination, describe nor suggest a rotor for an electric motor that includes a rotor core that includes a plurality of rotor laminations wherein each of the laminations has an outer periphery, and a first set of rotor laminations include a plurality of slots with skew portions extending in a first direction, a second set of rotor laminations that include a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one skew portions, and a central rotor shaft opening, a rotor shaft having an axis which is coaxial with a

rotor core axis of rotation and extending through the central rotor shaft opening, a plurality of secondary conductors extending through the slots, and plurality of permanent magnets located in the lamination notches. Specifically, none of Hibino, Berger, or Uchida considered alone or in combination, describe nor suggest a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one skew portions. Rather, Hibino describes a squirrel cage rotor including a rotor core formed by laminating a plurality of steel sheets that include punched slots that are skewed and the slots axially pass through the rotor core, Berger describes a squirrel-cage rotor that includes a groove cross section that is alternately displaced in and against the direction of the rotation of the rotor so that each conductor rod is fixed in place upon cooling and at high rotational speeds, and Uchida describes a rotor constructed by arranging unitary rotor elements in a longitudinal direction such that the angular position of each group of elements is shifted by an angle corresponding to a half wave of a slot ripple and shifted longitudinally to create projections and recesses in the longitudinal face of the core. Furthermore, Hibino does not describe or suggest a plurality of notches having an open end at the outer periphery of the lamination, nor, projections and recesses in the longitudinal face of the core, and Berger describes a notch having an open end at the outer periphery of the lamination that extends radially outward from a center of the notch and is not radially coextensive with a skew portion and does not describe nor suggest projections and recesses in the longitudinal face of the core. For at least the reasons set forth above, Claim 14 is submitted to be patentable over Hibino in view of Berger and Uchida.

Claims 15-17, and 19-20 depend from independent Claim 14. When the recitations of Claims 15-17, and 19-20 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15-17, and 19-20 likewise are patentable over Hibino in view of Berger and Uchida.

Claim 21 recites an electric motor including "a stator comprising a stator core, first and second main windings, said first main winding configured to form a lower number of poles than said second main winding, said stator core forming a stator bore...a rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open

end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions, a plurality of secondary conductors extending through said slots, and a plurality of permanent magnets located in said lamination notches and magnetized to form a number of poles equal to the number of poles formed by said second main winding.

Hibino, Berger, and Uchida are described above. None of Hibino, Berger, or Uchida, considered alone or in combination, describe nor suggest an electric motor including a rotor core including a plurality of rotor laminations wherein each of the laminations has an outer periphery, a first set of rotor laminations that include a plurality of slots having skew portions extending in a first direction, a second set of rotor laminations that includes a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions and a plurality of permanent magnets located in the lamination notches and magnetized to form a number of poles equal to the number of poles formed by a second main winding. Specifically, none of Hibino, Berger, or Uchida considered alone or in combination, describe nor suggest a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one skew portions. Rather, Hibino describes a squirrel cage rotor including a rotor core formed by laminating a plurality of steel sheets that include punched slots that are skewed and the slots axially pass through the rotor core, Berger describes a squirrel-cage rotor that includes a groove cross section that is alternately displaced in and against the direction of the rotation of the rotor so that each conductor rod is fixed in place upon cooling and at high rotational speeds, and Uchida describes a rotor constructed by arranging unitary rotor elements in a longitudinal direction such that the angular position of each group of elements is shifted by an angle corresponding to a half wave of a slot ripple and shifted longitudinally to create projections and recesses in the longitudinal face of the core. Furthermore, Hibino does not describe or suggest a plurality of notches having an open end at the outer periphery of the lamination, nor, projections and recesses in the longitudinal face of the core, and Berger describes a notch having an open end at the outer periphery of the lamination that extends radially outward from a center of the notch and is not radially coextensive with a skew portion and does not describe nor suggest projections and recesses in the longitudinal face of the core. For at least the reasons set forth above, Claim 14 is submitted to be patentable over Hibino in view of Berger and Uchida.

Claims 22-23 depend from independent Claim 21. When the recitations of Claims 22-23 are considered in combination with the recitations of Claim 21, Applicants submit that dependent Claims 22-23 likewise are patentable over Hibino in view of Berger and Uchida.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 14-17, and 19-23 be withdrawn.

The rejection of Claim 18 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. ("Hibino") (US 5,182,483) in view of Berger (US 5,637,943), further in view of Uchida (US 5,101,266) as applied to Claims 14-17, and 19-23, and further in view of Pielok (US 6,369,686) is respectfully traversed.

Hibino, Berger, Uchida, and Pielok are described above.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None Hibino, Berger, Uchida, or Pielok, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Hibino, Berger, and Uchida with Pielok, because there is no motivation to combine the references suggested in the art. Hibino skews slots to reduce harmonics electromotive in the rotor bars which translates into abnormal torque on the rotor and noise. Berger describes closed grooves with protuberances and bulges such that, after casting, the conductor rods are positioned such that, even at very high speed operation, no imbalance can occur. Uchida describes rotor elements that are shifted longitudinally to create projections and recesses in the longitudinal face of the core to engage recesses and projections in core end plates for holding the core together securely. Pielok shows a notch having an open end at the outer periphery of the lamination that extends radially outward from the notch but, is not radially coextensive with a skew portion. As such, Hibino and Berger describe different solutions to different problems, which suggests there is no motivation present in the prior art to combine the references. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one skilled in the art at the time the invention

was made to use the lamination configuration disclosed by Pielok on the rotor core disclosed by Hibino et al. in view of Berger for the purpose of providing laminations aligned in such a way that an automatic winding process can be performed through the respective winding openings." suggests combining the disclosures. Additionally, Applicants submit there is no motivation to combine Pielok with Hibino and Berger for the purpose of providing laminations aligned in such a way that an automatic winding process can be performed through the respective winding openings because Hibino and Berger describe AC induction motors wherein the rotor conductors are aluminum bars cast in place such that there is no need for openings for windings, Pielok describes a resolver with wire wound windings wherein an opening to the rotor periphery from the slots may aid winding the rotor. Accordingly there is no motivation to combine Pielok with Hibino and Berger.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Hibino, Berger, Uchida, nor Pielok considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 14 recites a rotor for an electric motor including "a rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one said skew portions, and a central rotor shaft opening...a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through said central rotor shaft opening...a plurality of secondary conductors extending through said slots...a plurality of permanent magnets located in said lamination notches."

None of Hibino, Berger, Uchida or Pielok, considered alone or in combination, describe nor suggest a rotor for an electric motor that includes a rotor core that includes a plurality of rotor laminations wherein each of the laminations has an outer periphery, and a first set of rotor laminations include a plurality of slots with skew portions extending in a first direction, a second set of rotor laminations that include a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one skew portions, and a central rotor shaft opening, a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through the central rotor shaft opening, a plurality of secondary conductors extending through the slots, and plurality of permanent magnets located in the lamination notches. Specifically, none of Hibino, Berger, Uchida or Pielok considered alone or in combination, describe nor suggest a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one skew portions. Rather, Hibino describes a squirrel cage rotor including a rotor core formed by laminating a plurality of steel sheets that include punched slots that are skewed and the slots axially pass through the rotor core, Berger describes a squirrel-cage rotor that includes a groove cross section that is alternately displaced in and against the direction of the rotation of the rotor so that each conductor rod is fixed in place upon cooling and at high rotational speeds, Uchida describes a rotor constructed by arranging unitary rotor elements in a longitudinal direction such that the angular position of each group of elements

is shifted by an angle corresponding to a half wave of a slot ripple and shifted longitudinally to create projections and recesses in the longitudinal face of the core, and Pielok describes a resolver that includes a first and a second winding core each with a first and a second set of core plates that are laminated and have a plurality of winding spaces with winding openings. Furthermore, Hibino does not describe or suggest a plurality of notches having an open end at the outer periphery of the lamination, nor, projections and recesses in the longitudinal face of the core, and Berger describes a notch having an open end at the outer periphery of the lamination that extends radially outward from a center of the notch and is not radially coextensive with a skew portion and does not describe nor suggest projections and recesses in the longitudinal face of the core. For at least the reasons set forth above, Claim 14 is submitted to be patentable over Hibino, in view of Berger, further in view of Uchida , and further in view of Pielok.

Claim 18 depends from independent Claim 14. When the recitations of Claim 18 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claim 18 likewise is patentable over Hibino, in view of Berger, further in view of Uchida , and further in view of Pielok.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 18 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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